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(54) Title: INTERNET BASED MUSICAL INDEXING SYSTEM FOR RADIO

## (57) Abstract

The invention includes systems and methods for viewing musical selections broadcast from a radio-station. To this end the system can include a web server that generates HTML pages that contain information representative of the play list of a radio station. In one embodiment, the list is displayed in real time and the selection currently being played is highlighted on the web page. Selections that have already been played can be shown with a text field that contains the time the selection was broadcast. The web server can further comprise an interface or connection to a database that indexes music selections to a table of recordings, such as an album, CD or Video, and that further indexes the recording to an audio sample that can be downloaded over the Internet or other computer network to allow a consumer to listen and determine if the downloaded sample relates to the preferred selection of the consumer. Optionally, the web server can include a transaction server for allowing the consumer to purchase the selection or associated CD. In a further optional embodiment, the web server can allow a consumer to provide comments on the musical selections purchased broadcast.

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## INTERNET BASED MUSICAL INDEXING SYSTEM FOR RADIO

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### Field of the Invention

This invention relates to a software program for viewing musical selections, and more particularly to a software program that can enable radio stations to post listings of musical selections for perusal by listeners and enable listeners to provide comments on the musical selections.

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### Background of the Invention

Consumers commonly get their exposure to new music from the airplay provided by radio stations. Accordingly, recording companies support radio stations with free selections of new music being produced by the recording company, incentives and advertising.

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Although, radio stations are quite good at providing consumers with exposure to new music, the ephemeral nature of the music broadcast makes it difficult for consumers to get the information they need to purchase a preferred recording. For example, consumers are often frustrated that the title of the music they are interested in is unknown to them, and that the radio stations fails to identify the title, artist or album associated with the recording. Moreover, radio broadcasts, by their nature fail to provide any way for a consumer to communicate back to the station its interest in learning about a selection, or purchasing the selection.

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Accordingly, there is a need in the art for a system that provides a consumer with the information necessary to identify and purchase preferred music selections.

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### Summary of the Invention

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The invention includes systems and methods for viewing musical selections broadcast from a radio-station. To this end the system can include a web server that generated HTML pages that contain information representative of the play list of a radio station. In one embodiment, the list is displayed in real time and the selection currently

5 being played in highlighted on the web page. Selections that have already been played can be shown with a text field that contains the time the selection was broadcast. The web server can further comprise an interface or connection to a database that indexes music selections to a table of recordings, such as an album, CD or Video, and that further indexes the recording to an audio sample that can be downloaded over the Internet or  
10 other computer network to allow a consumer to listen and determine if the downloaded sample relates to the preferred selection of the consumer. Optionally, the web server can include a transaction server for allowing the consumer to purchase the selection or associated CD. In a further optional embodiment, the web server can allow a consumer to provide comments on the musical selections purchased or broadcast.

15 More specifically, the systems can include a host HTTP server that supports various HTML pages, each page being configured for an individual radio station and each page appearing from an external source as an independent Web site.

20 The host HTTP server is connected to a database that may be located on the same or different computer. The host HTTP server interfaces with the database using a standard interface programming language such as Common Gateway Interface (CGI).

25 Each HTML page contains a list of songs played by that radio station. The list may contain songs that have been played by the station in the past, that are currently being played, or that will be played in the future. The list of songs may be contained in the database and the database may create the HTML page and provide the HTML page or a pointer indicating the location of the HTML page to the HTTP server. By providing a HTML page with a list of songs played by the radio station or which will be played by the radio station, the radio station can easily provide access to its listeners of its set lists.

30 The list of songs should be scrollable and able to be sorted by date and time. Further, the list should indicate for each song the time and date the song was played, the title of the song, the name of the Artist who recorded the song, and the name of the Compact Disc on which the song is recorded. Maintaining the list of songs in the database facilitates sorting the songs by date and time and will also facilitate other functionality of the system to be described later.

35 The HTML page containing the list of songs may optionally contain one or more additional features enabling the viewer to search for particular songs, comment on the

5 songs played by the radio station, or actually purchase music in the form of CDs or  
Cassettes.

10 One option available to the Radio station is to enable the user to click on a particular selection and submit a purchase order for the underlying CD or cassette. This order form could be generated using a standard JAVA applet or any other type of form generating program which can generate the necessary form. It is currently envisioned that the order form would require at least basic information such as the user's name, address, credit card number, the expiration date of the user's credit card, and any other information required to process a sales order. It is possible to make this a secure order form by offering the user the option of encrypting communications regarding submission  
15 of an order for music.

The user of the system may wish to purchase several CDs at once, and should not be prompted for the same information each time the user desires to purchase a CD. Accordingly, the system may optionally allow the user to select multiple tracks by clicking once on each desired track in the song list, and then requesting the user to click  
20 on a button labeled "submit order" or in a similar fashion. This button may be, as described above, a JAVA applet, or a hot link to another HTML page designed to provide the user with a list of selected Cds, the price for each CD, the availability of the CD, and which is designed to receive input from the user as to the user's confidential information necessary to complete the sale, as described above.

25 To facilitate locating a particular song in the song list, a search function may be provided on the HTML page. Storing the song list in a database which creates the HTML page in the first instance is beneficial to facilitate this functionality since database programs are typically adept at searching, retrieving and organizing information from a large volume of data. Alternatively, other search functions could be performed on the  
30 content of the HTML page itself without querying the database.

35 Another option which may be available is to enable the user to give a satisfaction rating of any number of tracks by simply clicking on the track as it appears in the list of songs. These ratings can be organized and used as concise, instantaneous feedback by the radio station. Additionally, the user may be allowed to enter comments for use by the radio station. One way of allowing the user to provide comments would be to enable the

5 user to select a particular song by clicking on the song in the list of songs, and then clicking on a hot button labeled "comment" or in a similar manner. This button could cause a JAVA applet to run, or could be a link to another HTML page in which the user could submit comments on the selection. The type of comment entered by the user could be tailored by the radio station to a great degree by prompting the user to enter particular types of information and optionally requesting the user to answer particular questions about the selection. Optionally, the radio station could enable the user to simply provide narrative comments on the selection.

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15 Other embodiments of the invention will be understood from the following description of certain illustrated embodiments.

#### Brief Description of the Figures

The following figures depict certain illustrative embodiments of the invention in which like reference numerals refer to like elements. These depicted embodiments are to be understood as illustrative of the invention and not as limiting in any way.

20 Figure 1 depicts one system according to the invention;

Figure 2 depicts one screen according to the invention that displays a play list for a radio station; and

25 Figure 3 is a flow chart diagram of one system according to the invention.

#### Detailed Description of the Illustrated Embodiments

To provide an overall understanding of the invention, certain methods, systems and devices of the invention will be discussed in the context of applications for providing consumers with access to radio play lists and for using the play list information to make purchases over the Internet. However, it will be understood by persons of ordinary skill in the art that the methods, systems and devices described herein are equally applicable to all cases in which a user accesses data from a computer network, and other applications and uses of the invention can be made without departing from the scope thereof. For

5 example, systems and methods as described herein can be employed for identifying information and purchasing movies from a television station. Other applications will, in part be described and, in part, be obvious from the following descriptions of the illustrated embodiments.

10 Figure 1 depicts a computer network that includes an server computer program running on a server 12. In this embodiment, the server 12 can be operated by a radio station and provide a user with information representative of the play list for that radio station. Figure 1 illustrates the flow of data that can incur during the operation of computer network which is allowing a user at the terminal 14 to employ the program on the server 12 to access information stored at the server site. It will be understood that 15 Figure 1 is a logical representation of the data flow that occurs during operations of the network 10. It is not to be understood as describing or limiting the network 10 to any particular type of configuration. For example, the network 10 can be a LAN, WAN, Intranet or any other type of network. Moreover, the network 10 is not limited to any configuration or topology, nor will Figure 1 be understood to limit the network 10 to any 20 particular type of protocol. However, for purposes of illustrating the system, the network 10 will be described as a TCP/IP network, and in particular the Internet and the World Wide Web service provided by the Internet.

25 The data exchanges depicted in Figure 1 illustrate generally that a user at the terminal 14 can issue a page request to the server 12, directing the server 12 to process the request and generate a page signal, such as an HTML page. In one embodiment this is done by processing information stored in the database 16 to generate a page signal for the user, and sending the page signal to the terminal 14 for viewing by the user. Typically, a browser program operating on the terminal 14 can be employed by the user for issuing the request signals and viewing the page signals.

30 In the embodiment depicted in Figure 1 the various elements, such as the terminal 14, the server 12, and the data storage devices 20 can be conventional network computer devices. For example, the terminal 14 depicted in Figure 1 can be any terminal suitable for operating a browser program for viewing information stored on the computer network, such as the Internet. For example, the terminal 14 can be an IBM PC 35 compatible computer system running the NETSCAPE browser program. Similarly, the

5 server 12 can be any computer system capable of operating a computer program for accessing information stored on a data network, and for performing data processing functions. The memory devices 20 can be any suitable memory device for storing a computer readable database, and optionally can be a persistent or volatile memory device. In one example, each device 20 is one or more hard disk drive units coupled to and  
10 operated under the control of the server 12. The server 16 can be any computer systems suitable for operating as file servers for delivering information over a network system. Continuing with the above example, the server 16 can be an Internet file server capable of transferring data according to the HTTP transfer protocol. It will be understood  
15 however that any suitable transfer protocol can be practiced with the systems described herein, including extensions and developments to HTTP. In one example, the server can be a PC clone running the WINDOWS NT operating system.

20 The computer program operating on the server 12 will detect the page requests generated by the user and process the page requests to generate pages, such as HTML pages, that contain information representative of the play list of the radio station. The program can be written in any high level computer language, such as the C, C++, or JAVA program languages. Moreover, it will be understood that the invention is not limited to any one implementation of the program, and that the program follows from principles of software engineering well known in the art, including those discussed in  
25 Jamsa *et al.*, *Internet Programming*, Jamsa Press, Las Vegas, Nevada, ISBN1-884133-12-6 (1995); and Graham, *HTML Sourcebook*, Wiley Computer Publishing, third edition (1997), which are incorporated by reference herein.

30 In one embodiment, the program provides to a user accessing a radio stations web site a page, such as that depicted in Figure 2. As depicted in Figure 2, the page includes a play list 42, a playback control button 44, an order control button 46, a search button 48, a keyword field 50 and a message board field 52.

35 The play back list 42 lists all the selections played by the radio-station, and in one embodiment, the web server updates the user's web page in real time so that the song currently being played is highlighted for the user. Optionally, the play list shows the title and the time that the selection was played or will be playing. The play list can give the schedule of radio content indicating every track played, the time/day, the CD, and the

5 artist, and put the information in a scrollable list sorted by time/date. The information can be available for past, present and future and playback can be available of CD samples played in the past and future. However, the system is not required to display schedules but the system can use schedules internally within the databases to help users search for and locate particular selections. Play lists for different days can be provided to the user  
10 on the user's request.

The display 40 can also include a playback control 44. A user can activate the play back button to request a sample of a selected song to be downloaded to the terminal  
14. The playback control will cause the web server 12 to access the database 16 to get an audio sample of the selection. The database 16 can include a set of data tables 24,  
15 such as tables 28 and 30, that are referenced to each other so that the database can select for a given track, such as track 1, the CD that is associated with that track. The database can also store for a selected CD, a set of audio samples that can be downloaded to the user. In one embodiment, when a user selects a track to playback, the server can download a set of audio samples for the CD that has the selected track. In this way, the  
20 user can hear the sample for the selected track, as well as the sample for the other tracks on the CD. Other database structures can be employed without departing from the scope of the invention. Preferably, the database is indexed on many different fields so that a user may quickly retrieve information based on a wide variety of criteria.

The page 40 can also include the order control 46 that allows the user to order a  
25 selection, or a CD that has the selection. In one embodiment, the order control 46 causes the server 12 to activate a commerce server, such as the Microsoft transaction server. The transaction server can operate to provide the necessary forms to the consumer and to implement the commercial transaction that allows the consumer to purchase the selection over the network 10. Optionally, the server can allow for user personalization so that a  
30 user can set up an account to store information such as credit card data, address data and other information, thereby allowing easier purchases. The system can be compatible with MS Wallet, or a similar product. The user therefore has the ability to click and buy CD's based on finding them from either the radios schedule displays, or clicking on the records found by searches related to scheduling. Optionally, users may buy individual selections

5 via download. The system also provides a service to radio stations allowing cataloging and user purchasing of promotional items.

Figure 2 further depicts that the display 40 can include a search button 48. The search button 48 can be associated with a keyword field 50, into which the consumer can enter a key word to be searched through the database 16 operated by server 12. By  
10 storing multiple information fields that are indexed widely, searching can be performed for particular CD by any of time, artist, track name, or CD name, "sounds like" searches; search for future play times across multiple radio stations; search for radio station within geographic areas and all above criteria. In this way, the user can search for words and a song title, the name of an artist, or any other type of information that can be searched on to collect information of interest to the consumer. The use of such search engines and  
15 their development are well known in the art of software engineering, and any suitable techniques can be employed herein.

Figure 2 further depicts a message board 52 wherein a user can enter information that can be stored in the database 16 by the server. For example, the user can enter  
20 information through field 52 that includes comments regarding a selection heard over the radio. These comments can be sent to the server 12 by the user and can be stored within the database to build a database of comments associated with a particular track. Other applications can be employed for the message board 52 without departing from the scope  
25 of the invention, such as allowing listeners to give satisfaction rating for any number of tracks by simply clicking on item as it appears on schedule page; comments can be left for any track; and ratings can be organized to give cohesive concise, instantaneous feedback to stations. This also allows Listener Community Development in that Users can leave  
30 comments for given tracks; Users can choose to see all messages left for a given track by clicking on schedule; Threaded messages and responses available; there is an ability to send messages to any individuals leaving messages; an ability to see more or all messages left by any author or any message and On line chat rooms associated with each radio station.

Figure 3 depicts one process 60 according to the invention for providing a consumer information representative of the play list, or other information on the radio  
35 station. Particularly, the process 60 depicted in Figure 3 includes a step 62 wherein the

5        Web server, such as the server 12 depicted in Figure 1, receives a request from a user, such as a consumer operating the terminal 14 while listening to the radio 16 depicted in Figure 1. The user, upon hearing a song of interest can log on through the Internet to the server 12 associated with the radio station. At that time the server 12 will receive a  
10      request from the user, and therefore the process 60 precedes step 62. Upon receiving the request the process 60 precedes the step 64 wherein the server 12 processes the request to generate a database access instruction. The database access instruction can be a standard SQL instruction for accessing a SQL database, such as the database 16 depicted in Figure 1. In step 66 the process causes a database access to occur and collects information from the database. In step 68 the process 60 employs the returned  
15      information to build an HTML page with the returned information. In one example, the user can click on one of the track selections shown in the play list 42. This can cause a page request to be sent to the server 12. Server 12 can process the page request to interpret it as an instruction to get information regarding the track. Such information can include the full title, the CD associated with the track, the artist associated with the track,  
20      the price of the CD, other CDs by the artist, Web links associated with the artist, or any other suitable information. With the returned information the process builds a HTML page that can be delivered to the user in step 70. Accordingly, in step 70 the page is delivered to the user who receives the information requested in step 62.

25      The invention is not to be limited to the above illustrated embodiments, but can include many additions and modifications, including being employed for Worldwide Internet Broadcasting wherein the system is available for any radio station. By hooking into these services to broadcast a station's air play across the Internet, stations may have the ability to preserve samples of every selection played automatically. This would allow sample playback associated with searches to help users identify the desired track. In  
30      other systems, there can be Mail Alert of future play times of favored items based on listener ratings of scheduled items, and of new releases of artists of favored items based on listener ratings of scheduled items. The system can provide Web Hosting Services for radio stations without web pages.

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5        Moreover, the systems and processes described herein can be formed of conventional components and systems include conventional database servers, such as Microsoft SQL server, a web server, such as Microsoft Internet Information Server, that can send a query to the database based on listener input from a web browser connected to the web server. The systems may cause additional information to be stored in the  
10      database, in the user's cookie file, or in hidden fields in the resulting HTML page. The system can format the resulting information from the database into HTML that the user can view in their web browser. Some records in the database may be linked to other internal and external database, for example: Track names are matched against a table of song titles and CDs/CDs are matched against a table of SKUs so that they may be easily purchased. Artist names can be matched against a list of special promotions such as  
15      upcoming concert tours. Based on this additional information, links are generated in the HTML that lead the user to other pages where they may see additional information or purchase related products, such as: The URL in a link for a CD encodes the CDs SKU and the station information so that the user can easily purchase it, and the store can assign  
20      a commission to the referring entity or entities. Other modifications can be made.

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I Claim:

1. A system for allowing a consumer to collect information on a portion of a broadcast, comprising
  - a server program capable of receiving requests from a user representative of a request to identify a portion of a broadcast,
  - a database for storing information representative of the play list of radio station associated with the broadcast, and
  - a server capable of generating a page signal representative of the play list and for delivering the page signal to the user.
2. A system according to claim 1, wherein the page signal includes information representative of a time of day associated with the portion of the broadcast.
3. A system according to claim 1, wherein the page signal includes information representative of an author associated with the portion of the broadcast.
4. A system according to claim 1, wherein the portion of the broadcast is representative of a song.
5. A system according to claim 4, further comprising a transaction server for allowing the user to purchase a recording associated with the song.
6. A system according to claim 1, further comprising a sample database for storing audio samples associated with the broadcast.
7. A system according to claim 1, wherein said server comprises a server capable of providing an indication of the portion of the broadcast currently being provided by the radiostation.

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- 5        8. A system according to claim 1, further comprising a server capable of receiving information from a user representative of input text and for storing the information in a database for subsequent access.
- 10      9. A process for allowing a consumer to collect information on a portion of a broadcast, comprising the steps of providing a server program capable of receiving requests from a user representative of a request to identify a portion of a broadcast, storing information in a database representative of the play list of radio station associated with the broadcast, and providing a server capable of generating a page signal representative of the play list and for delivering the page signal to the user.
- 15      10. A process according to claim 9, further comprising providing a database having audio samples associated with said broadcast.

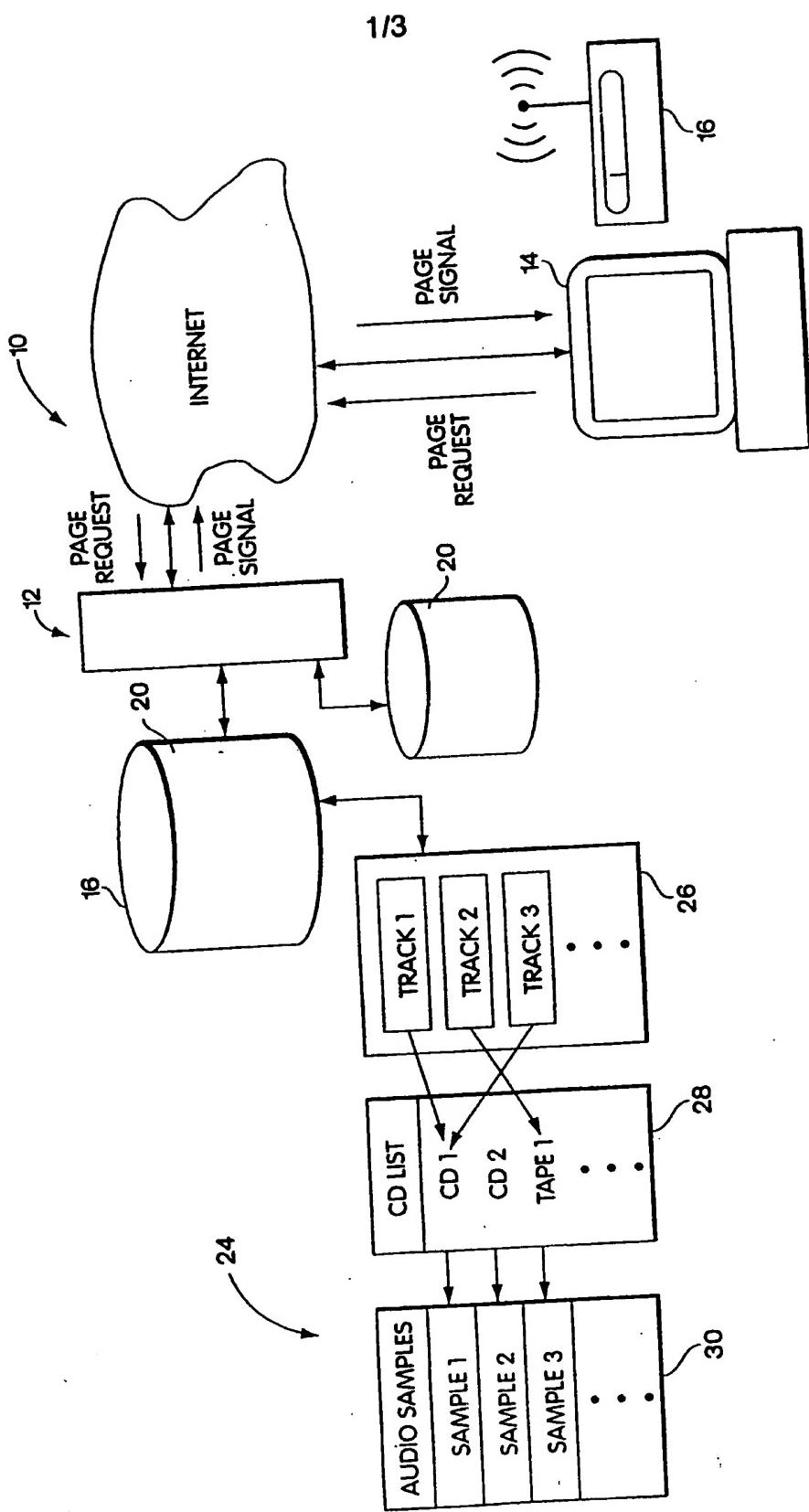


Fig. 1

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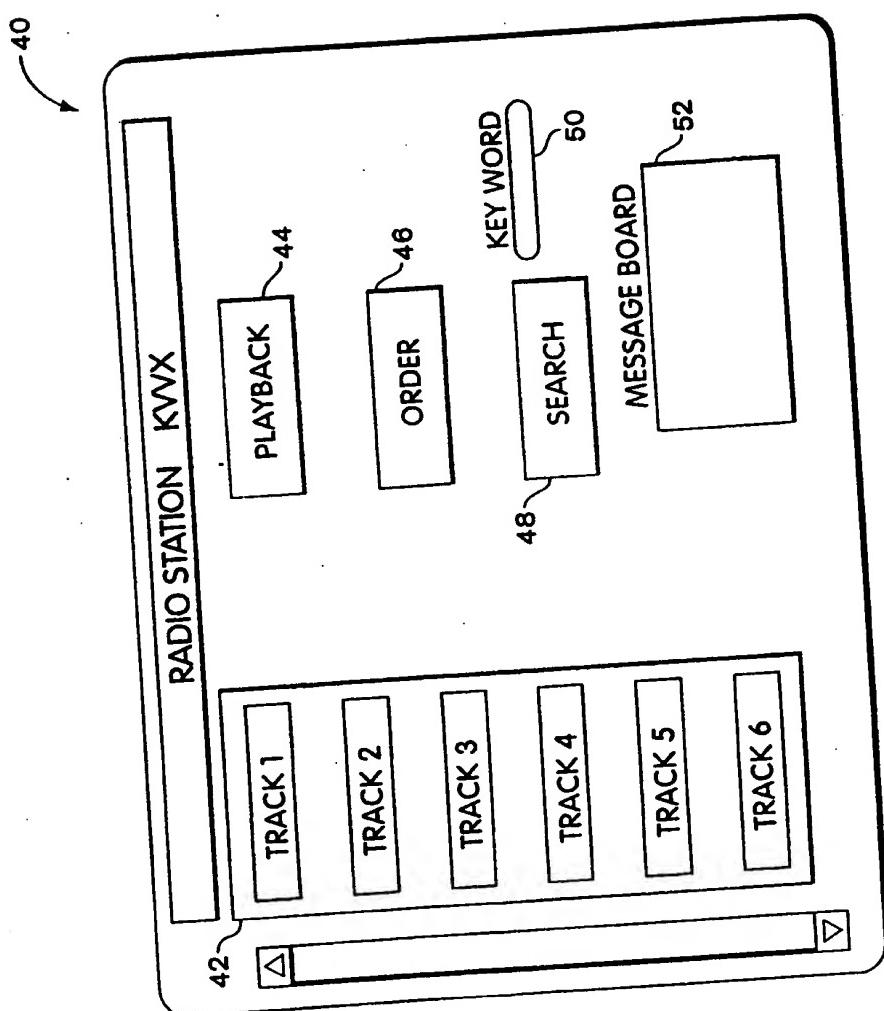


Fig. 2

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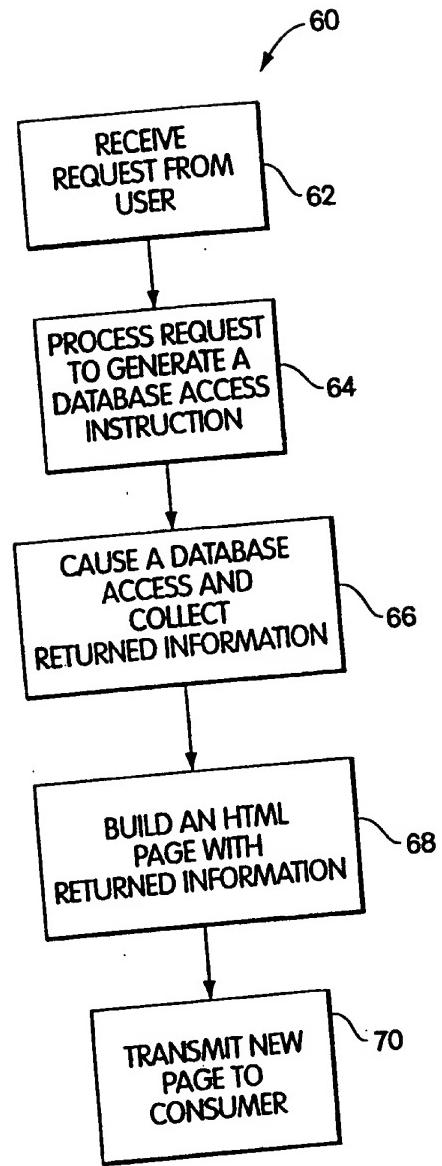


Fig. 3